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10/796,968	03/11/2004	Cheng-Yin Lee	ALC 3119	4035

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KRAMER & AMADO, P.C.
1725 Duke Street, Suite 240
Alexandria, VA 22314

EXAMINER	
KAO, WEI PO ERIC	
ART UNIT	**PAPER NUMBER**
2616	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/796,968	LEE, CHENG-YIN	
	Examiner	Art Unit	
	Wei-po Kao	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claim 9-18 have been considered but are moot in view of the new ground(s) of rejection.

2. Applicant's arguments filed on 12/04/2007 have been fully considered but they are not persuasive.

In response to the remark on pages 12 and 13:

In response to the entire content of the remarks, in particular that Donzis et al, U.S. Patent No. 6976071 fails to teach an ICMP message includes a basic type and a subtype identifying the message as a path verification request, the examiner respectfully disagrees. Although Donzis et al does not specifically disclose that an ICMP message includes a basic type and a subtype identifying the message as a path verification request, according to the ICMP standard documentation, RFC 792, an ICMP header contains a "Type" and "Code" fields; the "Code" field is the sub message of the "Type" field to further define the status of the ICMP message.

Claim Rejection - 35 USC § 103

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Donzis et al, U.S. Patent No 6976071 in view of Au et al, U.S. Patent No 7212492.

Regarding Claim 1, Donzis et al teach that **a method of verifying a data path from a source node to a destination node in a interconnected communication network, the data path including a source edge node connected to the source node and a destination edge node connected to the destination node** (see Abstract, Figure 1), **comprising the steps of: a) creating, at the source edge node, a path verification request message, wherein the message includes a basic type and a subtype that identify the message as a path verification request** (according to the ICMP standard documentation, RFC 792, an ICMP header contain a "Type" and "Code" fields; the "Code" field is the sub message of the "Type" field to further define the status of the ICMP message); **b) encapsulating, by the source edge node, the request message**

in a first Ethernet frame; c) sending the first Ethernet frame towards the destination node along the data path; d) detecting, at the destination edge node, the first Ethernet frame; e) creating, at the destination edge node, a path verification response message; f) encapsulating, by the destination edge node, the response message in a second Ethernet frame; g) sending the second Ethernet frame towards the source node along the data path; h) detecting, at the source edge node, the second Ethernet frame; and i) determining, by the source edge node responsive to receiving the response message, that the data path is operational (see Figure 3-4, Column 3 Line 57-58, Column 5 Line 1-19, Column 7 Line 1-15 25-35). However, Donzis et al do not teach that **the interconnected communication network is an Ethernet network; the first and second Ethernet frames include an indication to identify the first and second frames serve different purpose than other frames.** Au et al from the same field of endeavor teach that **the interconnected communication network is an Ethernet network** (see Abstract, Column 2 Line 35-39 44-46, Column 3 Line 1-6); **the first and second Ethernet frames include an indication to identify the first and second frames serve different purpose than other frames** (see Abstract, Column 2 Line 35-39). At the time of the invention, it would have been obvious to a person ordinary skill in the art to apply Donzis' method of detecting if a data path is alive in an Ethernet networking environment as described in Au's invention; furthermore, Donzis' method can be incorporated as part of the functionality of Au's network management method. The combination is made possible because the underlying technology for the two inventions base on OSI model: IP is at 3rd layer and Ethernet is at 2nd layer and the fact that 3rd layer is tightly based on 2nd layer. The motivation would have been that since the "ping" utility is widely used in networking management at the 3rd layer of the OSI

networking model such as IP network, such concept of "ping" can be also relied upon without additional modifications to the existing Ethernet architecture, which is the dominating 2nd layer technology (see Au et al, Column 1 Line 59-67, Column 2 Line 1-2). Furthermore, by shifting upper layer utility to lower layer ease the processing load of higher layer, which in turn yields the better and more focus performance in the overall communication process.

Regarding Claim 2, Au et al further teach that **the method as defined, wherein steps d) and h) include the step of filtering the frames from data traffic on the data path according to request and response indications respectively** (see Column 2 Line 35-39 44-46, Column 3 Line 1-6). At the time of the invention, it would have been obvious to a person ordinary skill in the art to apply Donzis' method of detecting if a data path is alive in an Ethernet networking environment as described in Au's invention; furthermore, Donzis' method can be incorporated as part of the functionality of Au's network management method. The combination is made possible because the underlying technology for the two inventions base on OSI model: IP is at 3rd layer and Ethernet is at 2nd layer and the fact that 3rd layer is tightly based on 2nd layer. The motivation would have been that since the "ping" utility is widely used in networking management at the 3rd layer of the OSI networking model such as IP network, such concept of "ping" can be also relied upon without additional modifications to the existing Ethernet architecture, which is the dominating 2nd layer technology (see Au et al, Column 1 Line 59-67, Column 2 Line 1-2). Furthermore, by shifting upper layer utility to lower layer ease the processing load of higher layer, which in turn yields the better and more focus performance in the overall communication process.

Regarding Claim 3, Donzis et al further teach that **the method, wherein steps b) and f) include the step of addressing the frames to the destination/source edge nodes and steps d) and h) include the step of terminating the frames** (see Figure 4, Column 5 Line 6-14, Column 6 Line 54-65 e.g. when the request message is received only the payload portion is preserved, new header and other fields of a packet is created and combined with the payload, thus terminating the request message).

Regarding Claim 4, Donzis et al further teach that **the method, wherein prior to step a) the destination edge node is discovered** (see Column 1 Line 64-67, Column 3 Line 22-47).

Regarding Claim 8, it is a system claim corresponding to the method claim 1, and therefore rejected under the same reason set forth in the same section of claim 1 in this paragraph.

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Donzis et al, U.S. Patent No 6976071 and Au et al, U.S. Patent No 7212492 as applied to claim 4 above, and further in view of Slater, U.S. Patent No 6952421.

Regarding Claim 5, Donzis et al and Au et al teach all the limitations in claim 4 except that **the method, wherein the destination edge node is discovered by using a hop-by-hop technique**

wherein the address of the destination node is carried by a discover request message. Slater from the same field of endeavor teaches that **the method, wherein the destination edge node is discovered by using a hop-by-hop technique wherein the address of the destination node is carried by a discover request message** (see Column 13 Line 17-26, Column 15 Line 56-67). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of discovering a destination node is an Ethernet network of Slater to Au's Ethernet networking management method. The rationale would have been that without modifying the existing Ethernet architecture, the node discovering functionality from Slater provides utility such as "traceroute" usually implemented in the 3rd layer of the OSI model is made possible in the 2nd layer.

Regarding Claim 6, Donzis et al and Au et al teach all the limitations in claim 4 except that **the method, wherein destination edge node is discovered by sending a discover request message to a special multicast address, and the destination edge node adjacent to the destination node responds to the discover request message.** Slater from the same field of endeavor teaches that **the method, wherein destination edge node is discovered by sending a discover request message to a special multicast address, and the destination edge node adjacent to the destination node responds to the discover request message** (see Column 9 Line 27-44, Column 13 Line 17-26). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of discovering a destination node is an Ethernet network of Slater to Au's Ethernet networking management method. The rationale would have been that without modifying the existing Ethernet architecture, the node discovering

functionality from Slater provides utility such as "traceroute" usually implemented in the 3rd layer of the OSI model is made possible in the 2nd layer.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Donzis et al, U.S. Patent No 6976071 and Au et al, U.S. Patent No 7212492 as applied to claim 1 above, and further in view of Coughlin et al, U.S. Patent No 6952421.

Regarding Claim 7, Donzis et al and Au et al teach the all limitations in Claim 1 except that **the method further includes the step of calculating a round trip delay by adding a time stamp to the verification message and calculating, by the source edge node the delay responsive to receiving the response message.** Coughlin et al from the same field of endeavor teaches that **the method further includes the step of calculating a round trip delay by adding a time stamp to the verification message and calculating, by the source edge node the delay responsive to receiving the response message** (see Column 7 Line 28-49). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of estimating round trip time between a pair of communication nodes of Coughlin to Au's Ethernet networking management method. The rationale would have been that without modifying the existing Ethernet architecture, the node discovering functionality from Slater provides utility such as "ping" usually implemented in the 3rd layer of the OSI model is made possible in the 2nd layer.

9. Claims 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slater, U.S. Patent No 6952421 in view of Ahearn et al, U.S. Patent No 5926463.

Regarding Claim 9, Slater teaches that **a method of tracing a data path route from a source node to a destination node through multiple intermediate nodes in a bridged Ethernet system** (see Abstract, Figure 15, Column 5 Line 9-44) **comprising: sending a succession of Ethernet encapsulated route query messages** (see Figure 12-13 e.g. the step of inserting a packet into the payload of another is known as encapsulation) **from the source node** (see Column 15 Line 56-67), **each message containing a media access control (MAC) address of the destination node** (see Column 13 Line 60-64) **and a time stamp value** (see Abstract Line 5-15, Figures 12 and 13B Element 102, Column 7 Line 56-61, Column 8 Line 22-31 i.e. in the art, TTL-time to live field/parameter is often used to indicate how long a packet can travel in a network; furthermore the TTL value is commonly measured in time, hop count or cost); **receiving, at route trace enabled nodes in the system, the encapsulated route query messages; determining at a control plane of the route trace enabled nodes the port to a next hop node on route to the destination node** (see Column 13 Line 65-67, Column 14 Line 1-2); **returning the MAC address of the current hop node to source node in a response message** (see Column 14 Line 6-16); **repeating the sequence through remaining intermediate bridges until a response message indicating that the destination node has been identified; and tabulating information in the response messages** (see Column 15 Line 56-67). However, Slater does not teach that **determining, at a control plane of the route trace enabled nodes, the MAC address to a next hop node on route to the destination node.** Ahearn et al from the

same field of endeavor teach that **determining, at a control plane of the route trace enabled nodes, the MAC address to a next hop node on route to the destination node** (see Column 14 Line 22-26). At the time of the invention, it would have been obvious to a person ordinary skill in the art to add a couple of functionalities of Ahearn's method to Slater's method since the two methods, which share the identical concept, serve exactly the same purpose even they are applied under slightly different telecommunication network. The rationale would have been that since the "traceroute" utility is widely used in networking management at the 3rd layer of the OSI networking model such as IP network, such concept of "traceroute" can be also relied upon without additional modifications to the existing Ethernet architecture, which is the dominating 2nd layer technology. Furthermore, by shifting upper layer utility to lower layer ease the processing load of higher layer, which in turn yields the better and more focus performance in the overall communication process.

Regarding Claim 10, Ahearn et al further teach that **the method, wherein when the encapsulated route query messages are received at a non-enabled route trace node steps are taken to skip to a route trace enabled node** (see Column 14 Line 32-37). At the time of the invention, it would have been obvious to a person ordinary skill in the art to skip the query message to a route trace enable node. The rationale would have been that no extra network resource is wasted in examining a packet that produce no result at the non-enable route trace node.

Regarding Claim 11, Ahearn et al further teach that **the method, wherein the service node sends a multi cast message to nodes downstream of the non-enabled bridge to locate a route trace enable bridge in the route to the destination node** (see Column 15 Line 6-11). At the time of the invention, it would have been obvious to a person ordinary skill in the art to skip the query message to a route trace enable node such as sending a multicast message to the downstream nodes to locate a route trace enable node. The rationale would have been that no extra network resource is wasted in examining a packet that produce no result at the non-enable route trace node.

Regarding Claim 12, Ahearn et al further teach that **the method, wherein the encapsulated route query message is sent to the node next to the non-enabled node, which responds to the multi cast message** (see Column 14 Line 32-37 66-67, Column 15 Line 1-8). At the time of the invention, it would have been obvious to a person ordinary skill in the art to skip the query message to a route trace enable node such as sending a multicast message to the downstream nodes to locate a route trace enable node. The rationale would have been that no extra network resource is wasted in examining a packet that produce no result at the non-enable route trace node.

Regarding Claim 13, Slater further teaches that **the method, wherein query message further comprises address information of the source and destination nodes** (see Column 14 and Line 17-25).

Regarding Claim 14, Slater further teaches that **the method, wherein each time stamp value is entered by the control plane at respective route trace enable bridges** (see Abstract Line 10-14, Figure 15, Column 16 Line 7-65).

Regarding Claim 15, Slater further teaches that **the method, wherein the response message includes address information of the source nodes and destination node** (see Column 14 Line 26-35).

Regarding Claim 16, Slater further teaches that **the method as defined, wherein the step of tabulating information generates a report defining bridges traversed by the Ethernet frame** (see Column 16 Line 40-57).

Regarding Claim 17, Slater further teaches that **the method, wherein time stamp information respecting each bridge traversed is included in the report** (see Column 16 Line 7-65 i.e. lines 10-11, 44-46 and 55-57 disclose that at step 300 a hop count is created; as far as the hop probe packet can travel according the hop count created, a hop probe reply packet is received from the replying device and at step 315 the method records the information regarding the replying devices; therefore, after a series of repeating probing, a list of number of hops and the corresponding device is reported).

Regarding Claim 18, it is a system claim corresponding to the method claim 1, and therefore rejected under the same reason set forth in the same section of claim 1 in this paragraph.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Referring to the PTO Form 892, references are cited to show similar method and system of reporting the status of the path of a packet.

11. Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wei-po Kao whose telephone number is (571)270-3128. The examiner can normally be reached on Monday through Friday, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

W.K.

RICKY Q. NGO
SUPERVISORY PATENT EXAMINER